CLAIMS:

1. A keyless blade clamp comprising:

a rod having a saw blade receiving slot,

a collar rotatably supported by the rod, wherein the collar does not move along the longitudinal axis of the rod when the collar is rotated from a blade clamping position to a blade release position and

means for locking the collar in the blade release position.

2. A keyless blade clamp as in claim 1, wherein an L-shaped slot is formed in the collar and the means for locking the collar in the blade release position comprises a pin that travels in the L-shaped slot.

3. A keyless blade clamp as in claim 2, further comprising a first spring attached to the rod and the collar, wherein the spring normally biases the collar toward the blade clamping position.

4. A keyless blade clamp as in claim 3, further comprising a second spring that normally biases the pin toward the blade release position.

5. A keyless blade clamp as in claim 4, wherein the means for locking the collar in the blade release position comprises an operating member disposed within the saw blade receiving slot, the pin being coupled to the operating member and the second spring normally biases the operating member toward the blade release position.

6. A keyless blade clamp as in claim 5, wherein insertion of a saw blade into the saw blade receiving slot pushes the operating member against the biasing force of the second spring, wherein the means for locking the collar in the blade release position is released and the first spring automatically returns the collar to the blade clamping position.

7. A keyless blade clamp as in claim 6, wherein an inner surface of the collar comprises a cam surface and the keyless blade clamp further comprises a blade clamping pin slidably supported by

an aperture in the rod, wherein rotation of the collar about the rod towards the blade clamping position causes the blade clamping pin to be urged towards the saw blade receiving slot.

8. A keyless blade clamp as in claim 7, wherein the blade clamping pin comprises a tapered end that is adapted to engage a hole formed in the saw blade in order to securely attach the saw blade to the rod.

9. A keyless blade clamp as in claim 8, further comprising an auxiliary sleeve attached to the rod, wherein the auxiliary sleeve is arranged and constructed to contact a shoulder portion of the saw blade when the saw blade is inserted into the saw blade receiving slot.

10. A keyless blade clamp as in claim 9, wherein the blade clamping pin has been treated to minimize adherence of dust to the blade clamping pin.

11. A keyless blade clamp as in claim 10, wherein the auxiliary sleeve is attached to the rod by an auxiliary pin.

12. A blade mounting device comprising:

means for clamping a saw blade within a slot formed in a rod by pressing a longitudinal face of the saw blade and

means for locking the blade mounting device in a blade release position.

13. A blade mounting device as in claim 12, wherein the means for locking the blade mounting device in a blade release position is released by inserting the saw blade into the slot.

14. A blade mounting device as in claim 13, further comprising means for automatically clamping the saw blade within the slot after the means for locking the blade mounting device has been released.

15. A blade mounting device as in claim 14, wherein the clamping means comprises a pressing member slidably supported within an aperture formed within the rod, the aperture communicating with the slot.

16. A blade mounting device as in claim 15, wherein the clamping means further comprises a sleeve rotatably supported by the rod, wherein a cam surface is defined on an inner surface of the sleeve and the cam surface urges the pressing member towards the slot when the sleeve is rotated about the rod.

17. A blade mounting device as in claim 16, wherein the pressing member comprises a pin having a tapered end adapted to engage a hole in the saw blade.

18. A blade mounting device as in claim 17, wherein the locking means comprises a spring that normally biases the locking means towards the blade release position.

19. A blade mounting device as in claim 18, wherein the sleeve comprises a slot and a pin is received within the slot, wherein the pin is normally biased towards the blade release position by the spring.

20. A blade mounting device as in claim 19, wherein the slot is L-shaped.

21. A blade mounting device adapted to mount a blade in blade receiving slot formed in a rod of a machine tool comprising:

a blade lock operating member that moves between a blade clamping position and a blade release position, wherein the blade lock operating member is normally biased towards the blade clamping position,

a blade lock control member that moves between a first position and a second position, wherein the blade lock control member prevents the blade lock operating member from moving to the blade clamping position when the blade lock control member is located in the first position and the blade lock control member permits the blade lock operating member to move to the blade clamping position when the blade lock control member is located in the second position, wherein

the blade lock control member is automatically moved from the first position to the second position when the blade is inserted into the blade receiving slot and

means for clamping the blade within the blade receiving slot when the blade lock operating member is in the blade clamping position, wherein the clamping means presses a longitudinally extending face of the blade against a longitudinally extending face of the saw blade receiving slot.

22. A blade mounting device according to claim 21, wherein the blade lock operating member is rotatably supported by the rod and the blade lock operating member rotates about the rod between the blade clamping position and the blade release position.

23. A blade mounting device according to claim 21, further comprising a compression spring that biases the blade lock operating member towards the blade clamping position.

24. A blade mounting device according to claim 21, wherein the blade lock operating member comprises a blade lock operating sleeve rotatably disposed around a front end of the rod and the blade lock operating sleeve rotates between the blade clamping position and the blade release position about the outer circumferential surface of the rod.

25. A blade mounting device according to claim 21, wherein clamping means comprises a blade lock pin that engages with a blade lock hole disposed within a base portion of the blade and the blade lock operating member further comprises a cam surface disposed within the inner surface of the blade lock operating member, wherein the cam surface urges the blade lock pin to engage with or release from the blade lock hole due to rotation of the blade lock operating member about the rod.

26. A blade mounting device according to claim 21, wherein the blade lock control member is biased towards the second position by a torsion spring.

27. A blade mounting device according to claim 21, wherein clamping means comprises a blade lock pin that engages with a blade lock hole disposed within a base portion of the blade and

the blade lock pin has a tapered surface that assists the release of the blade lock pin from the blade lock hole when the blade control member is rotated to the first position.

28. A blade mounting device according to claim 21, wherein the clamping means comprises a blade lock pin that engages with a blade lock hole disposed within a base portion of the blade and the blade lock pin is biased so as to be released from the blade lock hole when the blade lock operating member moves to the blade release position and when the blade lock control member moves to the second position.

29. A blade mounting device according to claim 21, wherein the blade clamping position and the blade release position of the blade lock operating member are defined by a blade lock operating slot disposed on the blade lock operating member and the blade lock operating slot extends in the circumferential direction of the blade lock operating member and wherein the first and second positions of the blade lock control member are defined by a blade lock control slot disposed on the blade lock operating member and the blade lock control slot extends in the longitudinal direction of the blade.

30. A blade mounting device according to claim 29, wherein the blade lock operating slot and the blade lock control slot are connected with each other.

31. A blade mounting device according to claim 21, wherein the clamping means comprises a blade lock pin that engages with a blade lock hole disposed within a base portion of the blade and the blade lock pin has been treated to prevent the adherence of dust.

32. A blade mounting device according to claim 21, further comprising an auxiliary sleeve integrated with the rod, the auxiliary sleeve contacting a shoulder portion of the blade mounted in the blade receiving slot.

33. A blade mounting device according to claim 32, wherein an auxiliary pin attaches the auxiliary sleeve to the rod.

34. A keyless blade clamp arranged and constructed to attach a blade to a reciprocating rod of a machine tool comprising:

a blade lock pin slidably supported within an aperture formed in the reciprocating rod, wherein the blade lock pin engages a blade lock hole disposed at a base portion of the blade when urged to a blade clamping position, wherein the blade lock pin has been treated to prevent the adherence of dust.

35. A keyless blade clamp as in claim 34, further comprising a collar rotatably supported by the rod, wherein the collar does not move along the longitudinal axis of the rod when the collar is rotated from the blade clamping position to a blade release position.

36. A keyless blade clamp as in claim 35, further comprising means for locking the collar in the blade release position.

37. A keyless blade clamp as in claim 35, wherein an L-shaped slot is formed in the collar.

38. A keyless blade clamp as in claim 37, further comprising a control pin that travels in the L-shaped slot.

39. A keyless blade clamp as in claim 38, further comprising a first spring attached to the rod and the collar, wherein the spring normally biases the collar toward the blade clamping position.

40. A keyless blade clamp as in claim 39, further comprising a second spring that normally biases the pin toward the blade release position.

41. A keyless blade clamp as in claim 36, wherein the means for locking the collar in the blade release position comprises an operating member disposed within a saw blade receiving slot formed in the rod, a pin is coupled to the operating member and a second spring normally biases the operating member toward the blade release position.

42. A keyless blade clamp as in claim 41, wherein insertion of a saw blade into the saw blade receiving slot pushes the operating member against the biasing force of the second spring, wherein the means for locking the collar in the blade release position is released and a first spring automatically returns the collar to the blade clamping position.

43. A keyless blade clamp as in claim 35, wherein an inner surface of the collar comprises a cam surface and rotation of the collar about the rod towards the blade clamping position causes the blade clamping pin to be urged towards the saw blade receiving slot.

44. A keyless blade clamp as in claim 34, wherein the blade clamping pin comprises a tapered end that is adapted to engage a hole formed in the saw blade in order to securely attach the saw blade to the rod.

45. A keyless blade clamp as in claim 34, further comprising an auxiliary sleeve attached to the rod, wherein the auxiliary sleeve is arranged and constructed to contact a shoulder portion of the saw blade when the saw blade is inserted into the saw blade receiving slot.

46. A keyless blade clamp as in claim 45, wherein the auxiliary sleeve is attached to the rod by an auxiliary pin.

47. A keyless blade clamp as in claim 46, further comprising:

a collar rotatably supported by the reciprocating rod, wherein the collar does not move along the longitudinal axis of the reciprocating rod and an L-shaped slot is formed in the collar

a pin that travels in the L-shaped slot

a first spring attached to the rod and the collar, wherein the spring normally biases the collar towards a blade clamping position and

a second spring that normally biases the pin toward a blade release position.

48. A keyless blade clamp as in claim 47, further comprising means for locking the collar in the blade release position comprising an operating member disposed within a saw blade receiving

slot formed in the reciprocating rod, the pin being coupled to the operating member and the second spring normally biases the operating member toward the blade release position.

49. An apparatus comprising:

a rod having a saw blade receiving slot,

a collar rotatably supported by the rod and having an L-shaped slot, wherein a first portion of the L-shaped slot extends radially with respect to the rod and a second portion of the L-shaped slot extends longitudinally with respect to the slot and

a pin received within the L-shaped slot, wherein the pin is normally biased towards a forward end of the saw blade receiving slot, wherein the pin radially moves along the first portion of the L-shaped slot when the collar is rotated with respect to the rod and wherein the pin is biased along the second portion of the L-shaped slot when the pin reaches the second portion of the L-shaped slot.

50. An apparatus as in claim 49, wherein the apparatus is locked in a saw blade release position when the pin reaches the second portion of the L-shaped slot.

51. An apparatus as in claim 49, wherein insertion of a saw blade into the apparatus automatically causes the apparatus to move to a saw blade clamped position.

52. An apparatus as in claim 49, wherein the collar further includes a cam surface defined along an interior portion of the collar and the apparatus further comprises a pressing member captured within the cam surface, wherein rotation of the collar with respect to the rod causes the pressing member to press against a longitudinal face of the saw blade.

53. An apparatus as in claim 52, wherein the pressing member is selected from a pin and a ball.

54. An apparatus as in claim 49, wherein the collar does not axially displace along the longitudinal axis of the rod when the collar is rotated.

55. An apparatus as in claim 54, wherein the collar further includes a cam surface defined along an interior portion of the collar and the apparatus further comprises a pressing member selected from a pin and ball captured within the cam surface, wherein rotation of the collar with respect to the rod causes the pressing member to press against a longitudinal face of the saw blade, wherein the apparatus is locked in a saw blade release position when the pin reaches the second portion of the L-shaped slot and insertion of a saw blade into the apparatus automatically causes the apparatus to move to a saw blade clamped position.

56. An apparatus comprising:

a rod having a saw blade receiving slot having a first portion of a first width and a second portion of a second width, wherein the second width is greater than the first width,

a control member slidably supported within the second portion of the saw blade receiving slot, wherein the control member has a width less than the first width and is biased towards the first portion of the saw blade receiving slot and

a collar rotatably supported by the rod between a blade clamping position and a blade release position, wherein insertion of a saw blade into the first and second portions of the saw blade receiving slot while the collar is in the blade release position pushes the control member rearward and causes the collar to automatically return to the blade clamping position.

57. An apparatus as in claim 56, wherein the collar comprises an L-shaped slot, wherein a first portion of the L-shaped slot extends radially with respect to the rod and a second portion of the L-shaped slot extends longitudinally with respect to the rod.

58. An apparatus as in claim 57, further comprising a pin received within the L-shaped slot, wherein the pin is biased towards a forward end of the saw blade receiving slot, wherein the pin radially moves along the first portion of the L-shaped slot when the collar is rotated with respect to the rod and wherein the pin is biased along the second portion of the L-shaped slot when the pin reaches the second portion of the L-shaped slot.

59. An apparatus as in claim 56, wherein a cam surface is defined around an inner surface of the collar and the cam surface biases a pressing member towards the saw blade receiving slot when the collar is rotated towards the blade clamping position.

60. An apparatus as in claim 59, wherein the pressing member is a blade lock pin that engages a blade lock hole disposed within a base portion of the saw blade and the blade lock pin has been treated to prevent the adherence of dust.

61. An apparatus as in claim 60, further comprising an auxiliary sleeve coupled with the rod, the auxiliary sleeve contacting a shoulder portion of the blade mounted in the blade receiving slot.

62. An apparatus as in claim 61, wherein an auxiliary pin attaches the auxiliary sleeve to the rod.

63. A blade clamp comprising:

first means for securely attaching a blade within a slot formed in a rod, the first means having a blade release position and a blade clamp position and

second means for locking the first means in the blade release position, wherein the second means automatically returns the first means to the blade clamping position by simply inserting the blade into the slot.

64. A blade clamp as in claim 63, wherein the first means comprises means for pressing a longitudinal face of the blade against a longitudinal face of the slot.

65. A blade clamp as in claim 64, wherein the first means further comprises means for engaging a hole formed in the blade in order to securely attach the blade to the rod.

66. A blade clamp as in claim 63, wherein the first means comprises a collar having a cam surface formed on the inner surface of the collar, wherein the collar is rotatably supported by the rod.

67. A blade clamp as in claim 66, wherein the first means further comprises a pressing member slidably disposed within a hole formed in the rod adjacent to the slot, wherein the cam surface urges the pressing member towards the slot when the collar is rotated toward the blade clamping position.

68. A blade clamp as in claim 67, wherein the collar does not axially displace relative to the rod when the collar is rotated from the blade clamping position to the blade release position.

69. A blade clamp as in claim 63, wherein the second means comprises an operating member and a spring disposed within the slot, wherein the operating member is biased toward the blade release position by the spring.

70. A blade clamp as in claim 69, wherein the first means comprises:

a collar having a cam surface formed on the inner surface of the collar, wherein the collar is rotatably supported by the rod and the collar does not axially displace relative to the rod when the collar is rotated from the blade clamping position to the blade release position and

a pressing member slidably disposed within a hole formed in the rod adjacent to the slot, wherein the cam surface urges the pressing member towards the slot when the collar is rotated toward the blade clamping position.

71. A tool-less blade clamp (10, 50) comprising:

a rod (2, 52) comprising a slot (2a, 2c, 52c) and a guide slot (2b, 52b) formed substantially perpendicularly to the slot (2a, 2c, 52c),

a control member (20, 56) slidably disposed within the slot (2a, 2c, 52c),

a spring (21, 57) biasing the control member (20, 56) towards a forward portion of the slot (2a, 2c, 52c) and

a sleeve (11, 53) rotatably supported by the rod (2, 52), the sleeve (11, 53) being prevented from axially displacing with respect to the rod (2, 52) when the sleeve (11, 53) rotates about the rod (2, 52).

72. A tool-less blade clamp (10, 50) as in claim 71, further comprising an L-shaped slot (16, 53a) formed in the sleeve (11, 53) and having a blade lock slot (16b, 53ab) disposed substantially perpendicularly to a blade lock control slot (16a, 53aa).

73. A tool-less blade clamp (10, 50) as in claim 72, wherein the control member (20, 53) further comprises a pin (22, 55) extending through the guide slot (2b, 52b) that travels within the L-shaped slot (16, 53a).

74. A tool-less blade clamp (10, 50) as in claim 73, wherein the rod (2, 52) further comprises a hole (2e, 59a) formed substantially perpendicular to the slot (2a, 2c, 52c), a pressing member (18, 51) is slidably disposed within the hole (2e, 59a) and a cam surface (17, 53b) is defined along an inner surface of the sleeve (11, 53), wherein the cam surface (17, 53b) urges the pressing member (18, 51) towards the slot (2a, 2c, 52c) when the sleeve (11, 53) is rotated about the rod (2, 52) to a blade clamp position.

75. A tool-less blade clamp (10, 50) as in claim 74, wherein the cam surface (17, 53b) permits the pressing member (18, 51) to release from the slot (2a, 2c, 52c) when the sleeve (11, 53) is rotated about the rod (2, 52) to a blade release position.

76. A tool-less blade clamp (10, 50) as in claim 71, further comprising a spring (12, 54) disposed around the rod (2, 52) and biasing the sleeve (11, 53) towards a blade clamping position.

77. A tool-less blade clamp (10, 50) as in claim 71, wherein rotation of the sleeve (11, 53) towards a blade release position causes the control member (20, 53) to move towards the forward portion of the slot (2a, 2c, 52c) due to the biasing force of the spring (21, 57) and the sleeve (11, 53) is automatically locked in the blade release position.

78. A tool-less blade clamp (10, 50) as in claim 71, wherein the slot (2a, 2c) has a first portion (2a) having a first cross-section and a second portion (2c) having a second cross-section, the second cross-section being larger than the first cross-section, wherein the control member (20) is slidably confined within the second portion (2c).

79. A tool-less blade clamp (10, 50) as in claim 71, further comprising locking rings (13, 14) that restrict axial displacement of the sleeve (11, 53) relative to the rod (2, 52).

80. A tool-less blade clamp (10, 50) as in claim 74, wherein the pressing member is a blade lock pin (51) and the blade lock pin (51) has been treated to prevent the adherence of dust and further comprising an auxiliary sleeve (59) coupled to the rod (52) by an auxiliary pin (60), the auxiliary sleeve (59) contacting a shoulder portion (3c) of a blade (3) mounted in the slot (52c).

81. A tool-less blade clamp (10, 50) as in claim 71, wherein insertion of a blade (3) into the slot (2a, 2c, 52c) when the tool-less blade clamp is in a blade release position pushes the control member (20, 56) rearward and automatically causes the sleeve (11, 53) to return to a blade clamping position.